

LIFE IN THE TIME OF COVID*

SPREAD OF AN EPIDEMIC, RUMOURS, MYTHS AND PUBLIC OPINION

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The onset of Covid 19 world over, had shifted our attention away from our regular tasks. I was advised to manage one of the help lines, for Bengali speaking and Hindi speaking “migrant” labour in Bengaluru, as most of them cannot speak Kannada. My daughter, who lives in Pune did the same for Kannada speaking and Bengali speaking construction workers in Pune and checked about their requirements of ration and arrangements for their return “home”. Similar tasks were taken up by my son and daughter-in-law in Delhi. While the plights of migrants have been recorded, I need to make two observations. The workers wanted to return home and they went about in their own way: while they knew that life back in the village would not be distress-free they still went back- it was their peaceful *satyagraha*. Secondly, though these workers were called “migrants”, no one treated them as outsiders. Completely shorn of any linguistic chauvinism, the “locals” helped those, who were otherwise termed as “outsiders”.

In contrast, I also knew, if anything happened to my son and his family in Delhi or to my daughter in Pune, I and my wife would not be able to walk from Bengaluru to reach them during lockdown; nor would they be able to walk for our help if anything happened to us. Hence I admire those innocent and determined, silent *satyagrahis*.

But during the lockdown there were also other things that caught people’s attention. One of them was the act

of banging of plates and clapping of hands on the day of the “Janta Curfew”. Another one was of lighting lamps on 05.04.2020 between 9.00 P.M. to 9.09 P.M. The magical powers of the claps and divine powers of 9 triggered wide discussions. People tried to tell us that these were extremely innovative plans from a genius, who would eradicate the virus from India in the 21-day battle. Even they tried to quote some unnamed “leading scientists”! Some even said that the NASA had found evidence of the germ receding from India, due to sound on the day of “Janta Curfew” and more strong effects would take place on 5th April, with the interplay between light and darkness!!

The actual results are as follows. The total number of Covid 19 cases as on 22nd March 2020, i.e. on the day of the Janta Curfew was 359 and on 5th April, they were 3373 while after the period of 21 days i.e. on 15th April, 2020, it rose to 13096. The total number today, i.e. 10th October, 2020 is 67,79,423. The question is : why is it growing and for how long will it grow? This is difficult to answer for it is not easy to know beforehand, all the parameters that contribute to the growth or to the decay. Thus, scientists cannot predict a precise number but can only give certain upper and lower bounds concerning the growth, and the rates of growth. Science also can have its uncertainties and science acknowledges that.

Answers to these questions, though not exact can certainly be analysed in terms of possible trends- this being a multi-disciplinary study. One of the early works was done by John Gaunt. In 1662, he published the book, “Natural and Political Observations made upon the Bills of Mortality”, where he made a systematic documentation of the causes of death. The first attempt to understand the rate of spread of an epidemic was carried out by the great

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mathematician, Daniel Bernoulli, in 1760, he being also trained as a physician.

In a work published in 1910, Sir Ronald Ross applied some of the mathematical modelling ideas in India, to control malaria. The idea to use modelling exercise caught attention in 1926-29 through the works of McKendrick and others. That was the time when the world had recovered from the devastation by the so-called “Spanish Flu” of 1919-20 which had killed 5 crore people, world over and about 1.4 crore died in India.

The basic idea behind the mathematical description of the growth of an infective disease is :

$$\text{Rate of growth of the number of infected people} = \text{Growth due to spread of infection} - \text{decrease of infection due to cure} - \text{decrease of infection due to death of infected people} \dots\dots (1)$$

It is important for us to focus attention on the first term, which can be written as

$$\text{Growth due to spread of infection} = + \{ \text{Rate constant} \} \times \{ \text{Number of infected people} \} \times \{ \text{Number of people not yet infected but who can be infected} \} \dots\dots\dots(2).$$

The rate constant depends on two factors, (a) how often do the uninfected and infected people encounter each other and (b) what is the probability that an encounter can lead to an infection. More frequent the encounter, higher would be the rate. Also, more unprotected the people are, e.g. laxity about the use of masks and *physical distancing* (we do not recommend the term, “social distancing”- social distancing is a social scourge), greater would be the chance of catching infection. Since, infections spread through contacts between infected and uninfected people, the product of the last two terms naturally would appear in the growth equation.

Then, how can the growth stop? This can happen if any one of the factors in the above expression be zero. One of the ways, would be to make the rate constant zero. That may be ideal but the rate constant can be reduced , i.e. brought close to zero with use of masks, physical distancing, quarantines, containments, lockdowns etc. Or, as an expert had said that mask wearing can be done at home too, the way Jain munis do.

The spread can also stop if the second factor is zero. That is, if there be no infected person to infect the uninfected population. This was so, in India too, before 30th January 2020, i.e. before the first infected person landed in India. Since he was put under quarantine, the

number of infected people in the “free” population remained zero for a long time. But the number grew, after more and more infected people arrived and they were not effectively detected and quarantined. The third factor in the growth due to spread of infection is zero when all people have got infected and hence there is no one else to catch the infection. The growth thus stops but this is a very unfortunate situation, since the whole population had suffered and many would have died.

The second and third terms would be determined by the effective steps of treatment of infected people. Effective medical care would make sure that, in terms of their magnitude, the second term is large and the third one is small.

What would be the most effective way to stop the infection? Noted epidemiologist and clinicians like Dr. T. Jacob John and Dr. M.S. Seshadri , formerly of the Christian Medical College, Vellore have noted, “ With our mindset of “big solutions” for ‘big problems’ , we err. Mask wearing is a simple solution; if practised by every man, woman and child when out of home, it is twice superior to lockdowns: it flattens the epidemic curve [of growth] better than leaky lockdowns; preserves the socio-economic basis which a lockdown destroys. Let us look at oral rehydration for cholera, developed by H.N.Chatterjee in 1957, was accepted by medical professionals and administrators only decades later.” [The Hindu, June 3, 2020, “Scripting a new narrative for Covid Control”].

Finally, what has all these to do with spread of rumours and myths? The process has some common features with that of spread of epidemics. A rumour starts with a few individuals. They spread it to few others who do not know about it and they in turn spread to others who did not know about the rumour till then. The rate process, one can identify is very similar to the way epidemics grow. The difference is that there is no quarantine in this case. A quarantine would mean a lockdown on fake news, i.e. on news that spread hatred, and are injurious to social life etc. We have no administrative filters for these. Also, the ones who want to spread this rumour have committed organizations that would try all means to increase the “rate constant”, by using Whatsapp, audio visuals, social media etc.

One such case took place 25 years ago, on 21st September, 1995. It had its origin in a small temple in New Delhi and news spread that idols of Ganesha had begun drinking milk! The news was spread by word of mouth, STD and ISD calls. In a few hours, it had not only spread to different Indian cities but also to the UK, USA, UAE,

Nepal, Canada i.e. to the Indian diaspora. The physical principle based on surface tension was soon explained and it was shown that any stone idol- of Ganesha and non-Ganesha subjects could also drink milk. After this, the frenzy subsided , as if the scientific explanation had acted as a vaccine for the rumour, but by then millions of litres of milk had been showered on Ganesha! The idols not only drank milk but were bathed in it!

Several such myths are now in circulation at the time of Covid, e.g. several natural antidotes have been suggested, like Gangajal, ginger, tulsi leaves etc. . The latest is that the central government has recommended some such steps in their protocol for Covid 19 management! While, the Indian Medical Association has opposed this step, one does not know, how much of it would be accepted by the public. A virologist would however, clearly explain that none of these would work, on the basis of the structure of the virus and strength of chemical bonds. Science can also explain why washing of

hands by soap or use of masks would act as suitable protections.

While myths and rumours have damaging effects, messages of progress, based on science and egalitarian ideas ought to be spread effectively and continuously. The rate of advance of these messages would also follow the same formula, as was given in the earlier equation of spread of epidemics. It would be interesting to know how these messages got spread at the time of our freedom struggle, e.g. of Gandhiji's call of non cooperation, Bhagat Singh's plans to make the deaf hear, Subhas Bose's radio speeches from the INA; or much later, Nelson Mandela's.

The great upsurge of protests in America at the killing of George Floyd, shows how rapidly news can spread nowadays. "Let me breathe", "Black lives matter" synchronize with "Hum Dekhenge" resonating with "JUSTICE, LIBERTY, EQUALITY", as proclaimed in the preamble of our constitution. □